

RAPID Task Order 2.2 Activity

SPS Program Regional Plant Protection Assessment

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1. INTRODUCTION

As many SADC member states are land-locked, and the trade volumes are not very large, the movement of plant materials within SADC is mostly by road and rail link. Exotic pest and invasive alien species are mainly expected to arrive over the sea and by air, but exotic pests emerging in other parts of Africa may of course also spread by road and rail or on their own wings into the SADC area. The dangers of introducing exotic pests and invasive alien species increase as SADC member states expand their agricultural base and diversify production of food, fiber and other commodities for the domestic and export markets.

1.1 *Agricultural systems*

Over the years, agriculture in SADC underwent several changes including increased risks to SADC food security and trade due to:

- New introductions of varieties or crops
- Loss of biological diversity
- Increased pest resistance to pesticides
- Increased breakdown of plant resistance to pests due to continuous cropping with a reduced spectrum of crops and due to erosion of the crops gene pool.
- New pest introductions through regional and international trade.

1.1.1 Crops

SADC member states grow a variety of crops for domestic and export markets. Major crops grown for export include maize, wheat, sugar, tobacco and horticultural products such as cut flowers, fruits and vegetables. These commodities are exported both to the regional and international markets and therefore need to conform to the phytosanitary standards expected by the international trading partners.

1.1.2 Pests as constraints

The majority of SADC member states rely on agriculture as the main stay of their economies. Agricultural production is hampered by many constraints including pests, which reduce crop yields. Pests therefore constitute one of the major constraints in SADC's agricultural sector. Amongst the major pests there are several of quarantine importance for the trading partner nations. The majority of SADC member states are implementing a national enforcement system with the mandate to prevent the introduction or spread of quarantine pests. Quarantine pests impact negatively on regional and international trade. Once a new pest gains entry into one state through regional or international trade, that state becomes a source of introduction of the pest into other member states where it will constitute constraint to agricultural production by increasing production costs or by limiting export trade possibilities or both.

1.1.3 Plant protection

National Plant Protection Units (NPPUs) are involved in a number of activities in research and provision of certain services in all eleven member states, including:

- Rendering advisory, plant quarantine and phytosanitary services
- Pest identification
- Rendering advisory services on pest management
- Pesticide registration
- Monitoring pesticide distribution, storage and use

The organizational structure of the national Plant Protection Units varies from one state to another. Entomology, plant pathology and nematology research appear to be the major disciplines in the majority of the member states with phytosanitary and pesticide registering units adequately organized only in a few states. The capacity to conduct research and render services to the farming community and the general public appears to be limited by shortage of manpower, facilities and funds in most of the member states except for a few. Funds for research and services are dwindling from year to year due to poor performance of the economy of most member states.

1.2 *Phytosanitary services*

SADC member states share many crops and farming systems spread over extensive agro-ecological habitats that transcend political boundaries and allow free movement of exotic and endemic pests and invasive alien species. Indeed, a pest or invasive alien species in one member state is a potential problem in another member and therefore there is need not only to exclude exotic pest species of economic importance from the SADC region, but also to control and contain those that have already become established but still have a limited distribution within SADC. The challenge to the SADC region is to find ways of securing its natural and agricultural resources from the ravages of exotic pests and invasive alien species while at the same time facilitating regional and international trade and exchange of in agricultural produce, products and germplasm.

In SADC, over many years, phytosanitary services have progressively declined in importance and capability. An increase in the introduction of exotic plant pests has resulted from uncontrolled importation, movement and disposal of plant materials. The more frequent the activity, the greater the volume of imports and variety of plant material involved, the greater the risk, the greater the change of exotic pests and invasive alien species become established and spread.

1.2.1 Plant quarantine pests

Most member states have established pest lists including quarantine pests (See chapter 2.2, on transparency and chapter 12.3-12.4 on public awareness). Quarantine pests are of economic importance to member states in which they do not occur or are not widely spread. Quarantine pests therefore require quarantine management actions to avoid introduction or spread. Each SADC member state therefore has to have an updated quarantine pest list. Pests may be categorized into A1, A2 and A3. A1 category is a list of pests not occurring in the country; the A2 category present quarantine pests existing in a country but not widespread and regulated and A3 category present a list of pests widely distributed in a country.

1.2.2 Introduction and spread of quarantine pests

The introduction of exotic pests including invasive alien species has varied among SADC member states but it has been accelerated everywhere due to:

- Increase in areas under crop cultivation coupled with greater speed and frequency of means of communication and transport.
- More diverse, numerous and expanded trade linkages
- Increase in the variety of imports and exports
- Food aid
- Increase in the importation of germplasm
- Decline of national plant protection capabilities in some countries

Recent exotic pest introductions into the SADC region include:

- Grey Leaf Spot Disease of Maize (South Africa)
- Soya bean rust (?)
- Coffee berry disease (CBD) (East African Highlands)
- Cassava Mosaic Disease (?)
- Larger grain borer (Tanzania)

FAO (1993) has recognized that a regional plant protection unit is required in the SADC area and therefore has promoted the establishment of a regional plant quarantine network with the mandate to promote harmonization and equivalence of plant protection policies. The need to establish a regional institutionalized phytosanitary structure cannot be overemphasized. Currently, effective liaison, cooperation and collaboration efforts amongst SADC member states to promote common interest are considered as weak. This affects especially the establishment of policies for the regional prevention of the introduction of exotic pests and invasive alien species. The institutionalization of a regional structure, once in place, will be a cost-effective strategy for the strengthening of national and regional plant protection capabilities in preventing or retarding further introduction and spread of exotic pests and invasive alien species.

1.2.2 Plant Protection Sub-Committee of SADC Crop Sector

Recognizing the role played by crops in the overall economic development in SADC, the SADC Council of Ministers rationalized the programs previously carried out through the Southern African Centre for Conservation and Utilization of Soils (SARCUSS). This endorsed a previous decision of Ministers of Food, Agriculture and Natural Resources to developing a regional program aiming at the crop sector. SADC created the Crop Sector whose overall goals include promotion of crop production and protection, storage, processing, marketing, distribution and utilization so as to enhance national and regional food security, trade and economic development. The new sector comprises six specialized sub-committees namely the Agricultural Engineering, Field Crops, Horticultural Crops, Plant Protection, Seeds and Soil Science Sub-committees.

In July 2000, a Sector specific workshop for the Crop, Livestock Production and Animal Disease Control and Agricultural Research and Training sectors identified issues for integration and protocol development including:

- Harmonization of Sanitary and Phytosanitary standards and regulations in relation to the promotion of regional and international trade
- Controlling the introduction and spread of exotic pests and diseases
- Controlling the spread of aggressive pests such as the Larger Grain Borer
- Harmonization of pesticide registration procedures and regulations
- Harmonization of Seed Laws to promote trade in seed and planting material
- Promotion of horticultural crop production and marketing

A technical committee and six sub-committees assist the sector coordinator. According to an approved regional institutional framework, the Plant Protection Sub-committee draws its members from the regional private and public pool of specialists such as entomologists, plant pathologists, nematologists and weed control scientists.

The mandate of the Plant Protection Sub-committee is to handle regional plant protection issues including sanitary and phytosanitary matters as specified in the WTO - SPS Agreement and especially the management of migratory pests and the harmonization of phytosanitary and pesticide management procedures and regulations. The Plant Protection Sub-committee is expected to address issues of trans-border pest and disease control as well as common approaches to the identification and control of pests and diseases within the region. It is in this view that the Sub-committee convened a Strategic Planning Workshop in Kadoma, Zimbabwe in September 2000 and a SADC workshop on pesticide management in Lusaka, Zambia in February 2002. Representatives of 12 SADC member states including all eleven dealt with hereunder attended these workshops. At the two workshops, harmonization of sanitary, phytosanitary and pesticide registration procedures and regulations were central during the discussions while integrated plant production and pest management were identified as a low risk plant protection strategies deserving to be implemented in the region.

1.2.3 Phytosanitary measures in relation to international trade

SADC member states recognize the need for regional and international cooperation in the management of pests and diseases of agricultural produce and products. These pests and diseases have direct and indirect impact on human, animal and plant health and the environment. Prevention of the introduction and spread of quarantine pests and diseases of plants and plant products through regional and international trade has been identified as high priority by most countries in the World. Accordingly, phytosanitary measures are applied to protect countries against the introduction of exotic pests and disease into new areas. However, the phytosanitary measures applied should be technically or scientifically justified, transparent, non-discriminatory and equivalent to an extent that they do not constitute a protective mechanism restricting regional and international trade with other countries. The phytosanitary measures applied in trade should be established on the basis of pest risk analysis with the aim of protecting plant health and trade. To this end, SADC member states should focus on close coordination in the application of phytosanitary measures with the aim of promoting regional and international trade following international standards, guidelines and

recommendations of the international agreements like International Plant Protection Convention (IPPC) and World Trade Organization (WTO) on sanitary and phytosanitary measures.

SADC plans to provide an enabling environment for the development and application of harmonized phytosanitary systems permitting the application of international standards for the enhancement of trade in agricultural produce and products. A harmonized system is expected to account for internationally approved principles aiming at protecting human, animal and plant health and the environment. The target of harmonization should target be the establishment of a minimum level of mutually recognized equivalency.

A harmonized system in SADC would secure a common and effective action for the prevention of the spread and introduction of pests and diseases of agricultural produce and products by promoting appropriate intervention strategies.

2. PLANT PROTECTION AND PHYTOSANITARY POLICY

In SADC very few member states have clear-cut policies on the use of pesticides and often pesticide registration and phytosanitary systems do not work (Table 1). Policies on plant protection exist, but are far from being comparable to the international standards. Member states need to come up with clear-cut policies on plant protection, pesticide registration including importation, distribution, storage and use and phytosanitary issues affecting agribusiness.

Clear-cut policies are essential and instrumental in reducing pesticide use, quarantine pest introductions and spread, risks to plant health, animal health and other non-target organisms, and reliance on pesticides in pest management. The role played by various stakeholders like government, local government, farmers and others is crucial for effective policing and overcoming potential problems linked to improper handling, storage and use of pesticides and agricultural produce and products destined for the export market.

2.1 *Plant protection strategies*

This policy is strong in some states and weak in others (see Table 1). Cultural, biological, host-plant resistance/tolerance, chemical and integrated approaches are some of the strategies employed to contain crop pests in SADC. Use of non-pesticide plant protection methods is gaining the momentum in the region in all agricultural sectors including large-scale, small-scale and rural farming sectors due to an increasing awareness in the need to employ low risk plant protection strategies.

Although non-chemical methods such as biological control and use of resistant varieties have had outstanding successes, the use of pesticides has been the mainstay of pest control in SADC; especially in commercial farming.

However non-chemical control methods have been successful in certain specific areas of Zambia, Zimbabwe and South Africa (highlands, close to Airports) where organic farming for fresh produce export is being practiced, but this is only a small fraction of the farming sector in the region. Five out

of the eleven states in this assessment have developed strategies close to the international standards (Table 1). Two of the states assessed still manage very poor strategies in the plant protection sector.

2.2 *Transparency implementation*

According to the WTO SPS Agreement, Member states are expected to notify other members of any new or changed SPS requirements affecting trade and the setting up of Enquiry Points or offices responsible for responding to more information on new or existing measures.

This Agreement also requests that states are open to scrutiny on how they apply phytosanitary regulations when trading in plants and plant products. The systematic communication of information and exchange of ideas among SADC members and other states would provide a better basis for national policies. When compared with international standards, the level of transparency implementation in SADC is still low while it is quite high in two of the eleven states assessed in this evaluation of plant health in the region (Table 1).

Actualized and published pest lists on quarantine and non-quarantine pests constitute another important component of transparency policies widely neglected in the area. They do not only confer confidence to trading partners but also to potential investors in agribusiness. All 11 countries manage some sort of pest lists and currently work on improvements, but only in South Africa these lists can be regarded as satisfactory. Unfortunately even these lists are only been made available to stakeholders upon specific and justified request.

2.3 *Pesticide management*

The intensification of agriculture and the use of high yielding crops varieties often culminate in increased use of pesticides resulting in often-unsuspected social, economic and environmental side effects. Pests, erratic rainfall and climatic changes continue to undermine national food security, desire to realize economic growth and equity. Pests and vectors of diseases constitute one of the major constraints to crop production and therefore to national public health delivery systems. Accordingly, management of pesticides following the international FAO Code of Conduct in the distribution, storage and use is essential in the region. This calls for a clear-cut policy on pesticide use and yet pesticides are used in most of the SADC member states without defined policy guidelines. In the absence of the right policy framework, pesticide management cannot follow international standards.

Pesticide management in the SADC region has not reached up to international standards and this may be attributed to poorly defined policies on the use of pesticides. Seven of the eleven states assessed for pesticide management apply satisfactory policies in this field. The remaining four states have very weak policies on pesticide management and some have not even enunciated pesticide management policies.

2.4 *Residue management*

Pesticide residue analysis in plants and plant products is part of pesticide management, constituting an important policy issue in agricultural production. Therefore, policy related to pesticide residue management in SADC was assessed. It is clear in Table 1 that pesticide residue management in SADC states is generally inadequate. Residue management is comparatively strong in one SADC state. SADC member states need to focus on residue policies that are commensurate with the consumer protection regulations of their major trading partners.

Whenever a pesticide is applied to an edible commodity or where its proposed use will result in contamination of foodstuffs, the applicant is obliged to submit residue data obtained under local conditions before pesticide registration can be considered. Any party can undertake this residue determination.

Residue data submitted in support of registration claims should present full degradation pattern. Initial deposits on the crop must be determined followed by progressive longer sampling intervals sampling beyond proposed tolerance values. Such data will permit possible extrapolation should the need arise. This should be the policy to be clearly adhered to by any prospective applicant prior to registration approval.

In general, tolerances laid down by the Environmental Protection Agency of the United States, FAO, WHO, CODEX Alimentarius are normally accepted in the SADC region. Policies on pesticide residue management, with the exception of only a few member states, are generally insufficient in SADC.

2.5 *Development and introduction of GMOs*

Recent advances in biotechnology applied to agricultural breeding have raised issues that are becoming more and more relevant to trade at national, regional and international levels. The commercial introduction of the products thereof calls for policy formulation to guide research, development and trade.

Policies on the development and introduction of genetically modified organisms (GMOs) vary across the region and are not clear or specific. In the majority of member states there are no policies related to GMOs and this may be ascribed to the fact that the issue is relatively new and not much is known concerning trade implications thereof. However, there are some member states that have started formulating GMO policies, some of which do not allow development and introduction from other countries either for research purposes or as GMO food. Policy framework appears to be in formulating stage in the region. In some states no GMO introduction is allowed at all while others allow only research in GMOs and therefore small samples are imported while not permitting importation of GMOs for consumption (see Table 1).

2.6 *Genetically modified organisms in plant protection*

Genetically modified varieties conferring protection to specific major pests are being offered in important crops such as cotton, wheat, maize, soybean, potato and tomato. This technology is quite new to the majority of SADC member states and has found use in the developed world in the management of pest species including insects and weeds. Although there are not clear policies, research in the use of this technology exists in some member states such as South Africa and Zimbabwe.

South Africa has approved the commercial use of GM cotton (Bollgard), maize (Yield) and soybean (Roundup resistant). Another aspect is the application of the irradiation sterility to pest species for mass release into the environment aiming at mating disruption. Most SADC member states have no policy on this aspect; hopefully the policies currently being formulated will cover GMO use in plant protection.

2.7 *Bio-control organisms*

The use of artificially reared bio-control agents has found use in member states and these are of phytosanitary concern when they are imported from another country. It is in this view that member states importing biological control agents need to have policy in their importation and subsequent use in pest management.

The use of biological agents is high in South Africa while the regional average is low. This indicates that the region does not have a clear-cut policy on the role of biological control of pests (Table1). Some member states are developing policies, others are not.

3. LEGISLATION

The law on quarantine and phytosanitary measures constitutes the justified foundation for the export and import of plants and plant produce in a way that reduces the risk of introducing and spreading quarantine pests and other invasive alien species in member states and indeed into the region. Clearly, this explains the enactment of laws on the movement of plant materials in and out of a country. The phytosanitary law provides for the designation of a legal authority such as the Minister of Agriculture to act and come up with regulations on plant material movement within the country, region and international community during trade (FAO, 1993).

3.1 *Phytosanitary legislation*

In SADC, phytosanitary systems vary from one member state to another according to colonial influence such as British, Portuguese, French and South African. Phytosanitary services also vary depending on the state of development of the system from non-existent to rather effective services. It is therefore not easy to identify common features although member states have learnt a lot from the

experiences of others, especially where joint commissions exist such as the Zambia-Zimbabwe Commission and the Malawi-Zimbabwe Commission.

Phytosanitary legislation needs to be periodically reviewed in order to ensure that they are consistent with changes in the environment and in the international standards governing trade. Table 2 indicates that most SADC member states have a phytosanitary law, which may have been amended or redrafted over time. The review of phytosanitary law is long over due for most of the member states of SADC while Lesotho and Swaziland are yet to enact phytosanitary laws to regulate imports and exports of plants and plant produce (Table2).

Table 2: Phytosanitary legislation in SADC (SADC, 2000, 2002)

Country	Name of Act	Date of Original Act	Date of Revised Act
Botswana	Plant Pests and Diseases	1965	No Revision but to be revised
Lesotho	Does not exist	Not applicable	Not applicable
Malawi	Plant Protection Act	1994	No revision
Mauritius	Plant Act	1976	To be revised
Mozambique	Regulamento da Quarentena dos Vegetais e da Inspeção Fitossanitaria, Ordem Direita Numero 192/88	1988	To be revised
Namibia	Agricultural Pest Act 3	1973	Currently undergoing revision
Republic of South Africa	Agricultural Act 36	1983	Currently undergoing revision
Swaziland	Does not exist	Not applicable	Not applicable
Tanzania	Plant Protection Ordinance Plant Protection Act	1937	1997
Zambia	Plant Pests and Diseases Act	1969	1999
Zimbabwe	Plant Pests and Diseases Act (Chapter 19:09)	1958	1999

The majority of SADC member states have a pesticide-registering scheme. However, laws on pesticide management were enacted long back in most states and their review is long over due (Table 3). In some states legislation only came into being recently while in Lesotho and Swaziland enactment of laws regulating importation, distribution, storage and use of pesticides is yet to be put in place. In some states the law is in place but the registration system remains on paper, as

enforcement is ineffective. Four states out of eleven have to review their laws. The remaining states are currently reviewing their Phytosanitary law or are yet to enact laws.

Table 3: Pesticide registration in SADC (SADC FANR, 2002)

Country	Name of Act	Date of Original Act	Date of Revised Act
Botswana	Agrochemicals Act	1999	No revision yet
Lesotho	Does not exist	Not applicable	Existence of one long over due
Malawi	Pesticides Act	2000	No revision yet
Mauritius	Pesticide Control Act	1970	Revision long over due
Mozambique	Exists but information not available	Recent Act	No revision yet
Namibia	Act 36	1947	Revision long over due
Republic of South Africa	Exists but actual information not available	One of the earliest in the region	Revision undertaken recently
Swaziland	Does not exist	Not applicable	Existence of one long over due
Tanzania	Act No. 18 now Plant Protection Act	1979	1997
Zambia	Environmental Protection and Pollution Control Act	1990	No revision yet
Zimbabwe	Fertilizers, Farm Feeds and Remedies Act (Chapter 18:12)	1958	2000

3.2 Procedures and Regulations

Phytosanitary procedures are put in place in order to implement laws and regulations for the prevention of pest introductions and spread. Regulations under a specific law respond to the need of states to be protected against introduction and /or spread of plant quarantine pests with plants and plant products. The regulations state the unwanted introductions with justification so as to objectively protect agricultural resources. Therefore regulations state the requirements for the movements of plants and plant products through border entry points and within the country.

Member states with phytosanitary laws have regulations that govern the movement of plants and plant products through their borders and within their territories (Table 1). Four states out of eleven assessed have phytosanitary regulations that are very close to international standards such as those of International Plant Protection Convention (IPPC). Lesotho and Swaziland have no laws pertaining to plant health and therefore regulations do not exist and the movements of plants and plant products are not regulated. Namibia and Botswana have regulations that are relatively weak when compared

with international standards and are expected to apply phytosanitary measures following international standards, guidelines and recommendations.

Most of the States have outdated phytosanitary regulations that need to be reviewed in order to conform to current requirements for the movement of plants and plant products in international trade.

3.3 *Operation Manual*

Phytosanitary procedures need to be documented and made available in the form of a manual. This manual should be used by plant quarantine personnel at border inspection facilities, in the laboratory, the greenhouse and in the field. The manual serves as an operation guide to staff and provides consistency in running phytosanitary services. Essentially a phytosanitary manual acts as a tool for the successful operation of a phytosanitary system. The manual is also an important database especially when it contains photographs of quarantine pests for identification characteristics. The manual should contain treatment protocol for quarantine pest management such as fumigation of grain before exporting or on arrival at the point of entry into a country.

Assessing the availability and use of manuals by states across the SADC region revealed that five out of eleven SADC states have operation manuals for use by phytosanitary staff. Little use of manuals occurs in the remaining six states (Table1).

3.4 *Implementation of international standards*

Member states are encouraged by the WTO SPS Agreement and the IPPC Convention to establish measures that are consistent with international standards, guidelines and recommendations. These standards, guidelines and recommendations have been developed by reputable field scientists with expertise in the area of plant health protection and are subject to international scrutiny and periodic review.

Application of certain plant health measures can result in restriction of regional and international trade, but the exporting countries may ask importing countries applying restrictive measures to provide scientific justification and demonstrating that relevant international standards would not culminate in appropriate level of human or plant health protection.

Being aware of WTO or IPPC phytosanitary standards, SADC member states aim at achieving a high level of phytosanitary performance in order to export agricultural produce and products to regional and international markets. In an assessment of the level of implementation of international measures, seven out of eleven SADC states employ a reasonably high level of standards more or less comparable to international standards (Table 1). The other four states are far from attaining international standards.

4. REGIONAL AND INTERNATIONAL COOPERATION

Despite the agricultural commonalities in SADC member states and the regional dimension of their exotic pest and invasive alien species problems, there is an alarming deficit of regional collaboration and cooperation in phytosanitary and pesticide management issues including policy, legislation, inspection, detection and treatment. There is inequitable distribution of expertise in phytosanitary and pesticide management issues and enforcement capacities and capabilities differ widely from one state to another within SADC.

Concerned about the absence of a strategy aimed at solving common problem in the region, governments of member states have been prompted to realize the need for regional approaches that address phytosanitary and plant protection issues. This demands the creation of a regional phytosanitary structure perceived to create, sustain, in the most cost-effective manner, national and regional plant quarantine capabilities consistent with the needs of individual SADC states and international community.

The majority of policies, laws, procedures and regulations used in SADC have a bearing on various international trade agreements and standard setting bodies such as:

- World Trade Organization Agreement on Sanitary and Phytosanitary Measures (WTO SPS Agreement) that regulate movement of agricultural produce and products in international trade.
- International Plant Protection Convention that sets internationally standards acceptable when applying phytosanitary measures in relation to trade in plants and plant products.
- Rotterdam Convention or Prior Informed Consent (PIC) Convention on importing and exporting pesticides aimed at reducing risks to human, plant and animal health that may arise during trade in pesticides.
- Stockholm Convention on persistent organic pollutants (POPs) seeks to phase out highly risky and persistent pesticides and phasing in non- or low risk plant protection strategies.
- Global Integrated Pest Management (IPM) Facility whose objective is to apply low risk plant protection strategies that reduce reliance on pesticide use in pest management and phase out the use of highly risky pest control methodologies.

Most SADC States collaborate and cooperate with regional and international organizations involved in plant protection development (WTO, IPPC, IAPC, SAFRINET, BioNET International, SEARCH, SABONET, CAB International, UNEP, FAO, Global IPM Facility, DANIDA, GTZ, NRI, etc. (See Appendix 1)).

5. PHYTOSANITARY INSPECTIONS

Phytosanitary inspections are essential policy enforcement tools. Phytosanitary inspections are also a basic tool to prevent crop or storage losses caused by pests. Phytosanitary inspections cover quarantine pests and regulated pests. They are used for hazard identification, risk monitoring and for decisions on commodity treatments. Phytosanitary inspections are especially indicated for the documentation of the seed certification system.

5.1 *Pre-entry inspections*

This encompasses all inspections performed to an export crop at a processing facility of consignment prior to the release of a commodity to circulate freely in the importing country. This includes all inspections performed in countries of origin, countries of transit and at the Sanitary Border Inspection Post (BIP).

5.1.1 Pre-shipment inspections

Seed and plant nurseries or agricultural produce and products are often inspected prior to loading for export in country of origin.

Pre-entry inspections are especially important for the case of seed and planting material and other valuable commodities, especially if quarantine eradication treatments are mandated (gas, hot water, irradiation, etc.). Phytosanitary pre-entry inspections are performed by an officer appointed by the importing country and at the expenses of the exporter.

Countries with highly developed SPS systems perform pre-shipment inspections not only to the commodities but also perform periodic assessments of the whole phytosanitary control system of the exporting countries and additionally also in the production districts or areas.

Pre-shipment inspections of nurseries and seed produce are currently not performed on a regular basis in the SADC states (Table 4). Only two states, Zambia and Zimbabwe perform pre shipment inspections of certain commodities (for example grain from areas infested with the Larger Grain borer) on a regular basis. Five states currently do not perform pre-shipment inspections.

5.1.2 Inspection of seed crops during growth

The risk of importing unwanted pests is much higher when planting material is the potential pathway. To prevent the importation of seed-born pest microorganisms, the seed importing country is well advised to inspect the planting material during its growth in the country of origin. Four out of 11 SADC member states have regulations and perform these inspections on a regular basis (See table 4). Nonetheless, in many cases SADC member states are prevented from performing these inspections in spite of existing regulations, because their seed demand for certain commodities is too low to make crop inspections in the country of origin economically feasible. Seeds from smaller crops are often imported into South Africa and stored, repackaged and distributed regionally from there. Such important information as the country of origin and the date of production are often not passed on and, when stated, are not verifiable. The only way out of this dilemma seems to be the placement of regional seed imports under the umbrella of a regional service organization.

5.1.3 Inspection of imported agricultural produce and products before or at entry point

In most regulations in the SADC region, the phytosanitary inspection of food commodities upon entry into a country is mandated. As a general practice, trained customs inspectors perform these inspections. Specialized phytosanitary personnel are summoned to the points of entry if important plant commodities are expected or if commodities have been detained due to suspected problems. This system is not satisfactory especially for the external borders of the SADC region. Permanent specialized phytosanitary inspectors should be placed at ports and international airports at during the arrival hours of carriers known to be bringing consignments of plant origin.

Six SADC States out of eleven do have a satisfactory inspection service, at least at ports, airports and major road and railway border crossings. Some landlocked states and states with a reduced population rely largely on the services of their bigger neighbors, especially on South Africa. Improvements are required in the basic academic qualifications of the inspectors, the sampling and laboratory support facilities, the information and communication systems at the borders and in the availability of transport for the samples.

5.1.4 Inspection of pest free areas prior to export and importation

Pest free areas and areas of reduced pest incidence are defined as areas in which a specific quarantined pest does not occur or does occur in very low numbers as demonstrated through scientifically carried out surveys and where, if appropriate, this condition is monitored and officially maintained for a defined period.

Certain plant commodities and especially certified plant seeds can only be marketed if they have been produced in pest free areas or in areas of proven low pest incidence. These areas have to be monitored and inspected during each production cycle. During cycles of abnormal climates, these areas may become susceptible to pest invasions. Only four SADC states out of eleven (see table 4) currently implement regular inspections of pest free areas, especially concerning seed and planting material produced in other SADC member states. The same states also establish and monitor pest free areas for export commodities.

5.1.5 Incinerators at entry points

Incinerators at Sanitary Border Inspection Posts are required for the safe destruction of intercepted plant material and especially for the safe elimination of organic catering garbage from ships, trains and airplanes. Catering waste has been recognized worldwide as a major hazard for the introduction of quarantine pests.

Currently only one out of 11 SADC member states is equipped with functional incinerators at the majority of entry points. In another three states about 40 % of entry points have been equipped with incinerators (Table 4). Incinerator capacity is especially important at airports and ports handling large numbers of passengers. It is deemed essential that this service be extended.

5.1.6 Consignments in transit (passing through) and in bond (for re-export)

Consignments in-transit or in-bond consisting of plant material or otherwise recognized as a pathway for pests are an important issue in SADC regional trade. Consignments imported by one country in

the region are often kept in bonded stores and then re-distributed to other states in the region. The regional control system for the inspection of these consignments is generally weak (Table 4). Only three out of eleven SADC member states attempt to implement inspections for this kind of shipment. It is therefore deemed essential to establish regulations concerning the in-transit movement of consignments.

5.1.7 Consignment imported to make up for shortfalls in commodities for export (top up consignment)

As several SADC states have small production districts, they sometimes have to rely on topping up their exports with imports from other states, as otherwise they may not meet the minimum quantity requirements of the importer. So far only one SADC member state implements regulations for the pre entry inspection and declaration of topped up consignments (Table 4).

5.2 *Post-entry and export crop inspections*

Plants, especially those imported for multiplication, may have been infected with microorganisms shortly before harvest. Post entry inspections should be mandatory for them.

5.2.1 Plant nurseries

Government or private plant nurseries raising crops from imported planting material need to be registered and regularly inspected. Five out of eleven SADC states are currently performing regular post entry nursery inspections. (Table 4)

5.2.2. Seed crops in the field

Seed crops in the SADC region are often raised from imported basic material. Seed and phytosanitary inspectors should inspect those crops with utmost care. Five out of eleven states do perform regular inspections of seed crops initiated with imported seed. In the rest of the states these inspections are limited to a few specific crops. In most states the laboratory testing facilities for the timely detection of microbiological pests in seed crops are generally inadequate (Table 4).

5.2.3 Green houses/glasshouses

For the production of new and alternative export crops, most SADC states have to import vegetative materials for planting. These materials are usually first multiplied in permanently or temporarily quarantined glass or greenhouses and have to be inspected for accidentally introduced pests and diseases. Post entry inspections of materials imported for planting in greenhouses involving mainly ornamentals and vegetables are routinely carried out in five out of eleven SADC states. In the other six states, not much development of alternative crops is taking place (Table 4).

5.2.4 Packing plants / cold-stores

Cold stores and packing plants are essential infrastructures to enable the safe export of fresh plant products to overseas Markets. These facilities have to comply with a number of grades and standards set forth by the importing country. The inspection service of the exporting country is responsible to carry out compliance inspections. About five out of eleven SADC states carry out regular phytosanitary inspections at cold stores and packing plants. Three states do not inspect such facilities at all because the quantities of concerned exports are negligible.

5.2.5 Laboratories/ facilities

Phytosanitary diagnostics laboratories are an essential part of any sound plant pest risk management system. For the good performance of the system it is essential that the diagnostic laboratories are able to perform analysis in a minimum of time. All eleven SADC member states have some sort of plant health diagnostics facility. Only six states can cover this service for a wide array of commodities exported to diverse markets.

6. PHYTOSANITARY DOCUMENTATION

Phytosanitary documents are essential tools attesting compliance with set standards and requirements and are an essential component of pest risk management. Phytosanitary documents must be based on international standards and validated by the officials in the originating country. Phytosanitary documents must be based on surveys, inspections, laboratory analysis and other methods establishing compliance with the conditions set forth on import permits.

6.1 *Phytosanitary Certificate*

Currently only 5 of 11 SADC member states issue phytosanitary certificates based on inspections and laboratory analysis as recommended by IPPC. Lesotho and Swaziland issue such documents only upon request of a trader. When re-export phytosanitary certificates are needed, original exporting and destination country requirements are to be considered.

6.2 *Seed Inspection Certificate*

The situation is similar than in the case of the phytosanitary certificate. Six out of eleven states carry out seed multiplication processes subjected to seed certification.

6.3 *Phytosanitary Import Permit*

Import permits provide assurance to the trading partners that, if the consignment is in compliance with the set conditions, the risk of interception and rejection is minimized. Import permits are generally and correctly mandated by 7 out of 11 states and limited to certain commodities and often not sufficiently specific in the other 4 states (Table 5).

6.4 *Non-Compliance Notification*

By international standards it is recommended that shipments accompanied by phytosanitary import permit should also have attached a slip to notify trading partners and nations concerning interception due to noncompliance. This system is widely neglected by most SADC trading partners, and this is negatively affecting intra-regional trade. Only one out of 11 SADC states does perform these notifications to a certain extent. In eight states the system may be applied in ports and airports but is not used at road border crossings. In two states the system is not used at all.

6.5 *Treatment Certification*

When the importing country requires pre-shipment treatment of plants or plant products likely to be affected by regulated pests, a certificate must be issued adducing the specifics of the kind of treatment procedure and dose given.

6.5.1 Commodity treatment

Countries quarantine manuals mandate treatment certificates for certain commodities. In only six out of eleven states these certificates are reliable and recognized by trading partners (Table 5).

6.5.2 Vehicle treatment

Nothing is gained if a treated commodity is transported in infected vehicles. Vehicles should be treated and a certificate may be requested in import permits. The treatment of ships, airplanes, containers, railroad boxcars and trucks is regularly performed and certified in 6 out of 11 states. The weakness in implementing and certifying vehicle treatment is more common than in the case of commodity treatment (Table 5).

7. PEST RISK ANALYSIS

This process is applied to scientifically establish the economic importance and potential impact of a quarantine pest and to determine the extent of the preventive measures to be taken. The WTO SPS Agreement recommends that states shall use pest risk analysis methods based on biological and technical evidence and whenever possible, follow procedures developed within the framework of international standards, guidelines and recommendations. Plant or plant product pest risk analysis, depending on the nature of the problem and the needs of the risk decision maker, is often complex.

7.1 Hazard identification, characterization and hazard exposure

As shown in Table 4, only 5 of 11 of the SADC member states evaluated herein do implement a satisfactory system of phytosanitary hazard identification covering most potential agro-industrial export commodities. The other six states are either small or landlocked or both, or, as in the case of Namibia, have a small internal market and rely on the supplies of larger and better equipped SADC states for their basic food import needs. The case of Mauritius is different. Being a small island with low biodiversity, risks and hazards are manifold and a thorough assessment is essential (Table 6). For these and other reasons 6 states have so far not dedicated resources to establish hazard identification and risk analysis systems.

Even if the hazard identification capabilities of the 5 larger SADC states are satisfactory, there is room for improvement, especially in the availability of specialized information about hazards emanating from new commodities to be imported.

What is needed is a regional solution for information sharing on hazards

7.2 Pest Risk Assessment

Trade related pest risk assessment is the evaluation of the introduction and establishment potential of regulated pest organisms using trade commodities as a pathway

The same six states mentioned under 7.1 have weakly developed pest risk assessment capabilities and the same 5 states are better equipped. On average, all states are better prepared for risk assessment as compared to hazard identification and characterization. Capacity strengthening is essential (and not so difficult).

7.3 Pest Risk Management

This encompasses the assortment of measures to protect a country or area from the introduction of a potential pest organism.

Eight States out of eleven have satisfactory risk management capabilities. Of course this implies that all those commodities affected by hazards and risks not well identified may be banned or their importation severely restricted. Three states clearly rely on larger states for their essential imports and have weak systems. Mutual service agreements are needed to transform these weaknesses into strengths. In all 11 states there is room for improvement in this field.

7.4 *Pest Risk Communication*

This encompasses the timely information of other trading partner states concerning risks identified and constituting a potential hazard affecting trade. This clearly is part of the transparency policies of a trading country.

Complete, categorized and officially communicated and updated pest lists are one important component of pest risk transparency in trade. Most SADC member states have neglected this field, and are therefore not in compliance with the WTO SPS Agreement. Only 4 SADC member states implement more or less satisfactory risk communication systems. Work on this subject is urgently needed in all SADC states (Table 6).

8. *RAPID ALERT SYSTEM*

This encompasses a series of measures and actions designed to gain constant information on pest status and pest changes and to enable the management of pest free areas and farming systems. Rapid alert systems are essential for meeting transparency procedures and pest risk management.

8.1 *Pest surveillance*

Pest surveillance encompasses field inspections, crop surveys and specific trapping systems. Pest surveillance is essential for the management of pest free areas, areas of low pest incidence and the establishment of the absence of regulated or quarantined pests (Table 7).

As presented in Table 7, six states out of eleven manage satisfactory pest surveillance systems, at least in seed and export crops and monitor migratory pest hazards. In 5 states these systems need upgrading

8.2 *Field inspections*

Phytosanitary field inspections are essential to establish compliance of a crop with requirements of seed certification of importing countries. Also in this field 6 larger SADC states manage satisfactory field inspection systems, mostly associated with seed certification. In all SADC states there is room for improvement in the development of field inspections for export crops. Identified hazards should be subjected to preventive management procedures (Table 7).

8.3 *Packing plant and store inspections (warehouses)*

Export commodities are inspected at packing plants to validate the phytosanitary certificate. Without these inspections, exports of certified seed and fresh agricultural produce are hampered. These inspections require the support from qualified diagnostic laboratories, especially for pest microorganism identification.

Six SADC member states implement satisfactory storage inspection systems, especially for seed crops and traditional export crops such as tobacco, coffee, fruits, etc. In Two states phytosanitary store inspections are limited to grain pests in products for human consumption. In all SADC member states there is ample room for improvement.

8.4 *Emergency actions*

Emergency action plans constitute a response system to upcoming serious phytosanitary situations. This could encompass the ban of affected import commodities, the treatment of affected consignments and pest control. Emergency actions are also required, when pest are detected in pest free areas. Trapping, monitoring and treatment has to be implemented, the importing partner has to be informed and exports may have to be halted for as long as the emergency situation remains out of control.

As shown in Table 7, in seven states the Plant Protection Services are sufficiently prepared to carry out emergency actions against migratory pests and well-known pests of major crops. In Lesotho phytosanitary emergencies would have to be covered by South Africa. No member state has fully mature systems to enable effective emergency actions in case major quarantine pests are detected.

8.5 *Migratory pests*

In the SADC region several species of locusts, armyworm, and even quelea (Weaverbirds) must be considered for their recurrent migratory behavior.

Migratory pests, once in full gradation, can devastate crops in larger areas completely. Their control must therefore be preventive. All migratory pests have known areas where gregarious behavior may get started. Full gregarization usually requires the coincidence of a number of external factors. These factors have to be monitored along with the conditions in the breeding grounds. Early warning systems are essential, so that control can be carried out before the pests can affect commercial crops.

Most SADC member states are periodically threatened by migratory pests and with the exception of Botswana, Lesotho and Namibia there are acceptable surveillance systems in place. Major weaknesses can be found in the fact, that these systems are not regionalized. Migratory pests don't respect national boundaries.

9. SAFETY ASSURANCE SYSTEM

Safety assurance systems for export crops are extremely important to protect the farmers' economic interest as well as the importing country.

9.1 *Non-compliance, transparency and conformity assessment*

When fresh agricultural products are being produced for export, it is essential that conformity with the requirements of the importer be assessed at every stage in the farm-to-port-of-entry production chain. Plant health requirements during production, storage, packing and transport must be clear to the producer and to the enforcement authority issuing plant health certificates.

Sufficient conformity assessment capabilities are available in the form of government or private assessment teams in eight of eleven SADC states (see Table 8). Trading partners can recognize these assessment teams as reliable. In some exporting SADC members these services are rather expensive and the producers do not have too many options (often there is only one).

9.2 *Pest management programs and extension services*

These programs are essential to lower the risks of total investment loss when crops are planted for export. These programs are especially important to achieve compliance with maximum pesticide residue levels. In most SADC member states these programs are developed by research stations and then transferred into the farming system by means of extension services.

Eight out of eleven SADC states service their farmers' with pest management advice. In the smaller states, the phytosanitary capabilities are not justified. A regional solution may be an option.

9.3 *Pest risk management programs*

A pest risk management program encompasses the assortment of measures to protect a country or area from the introduction of a potential pest organism.

Eight States out of eleven have satisfactory risk management capabilities. Three states clearly rely on larger states for their essential imports and do not have strong systems of their own. In all 11 states there is room for improvement in this field.

9.4 *Good Agricultural Practices*

This encompasses all farming operations designed to promote crop quality, yield stability, soil and water conservation, farm productivity, commensurate use of resources and others. In the field of plant protection, this also includes the use of healthy seed, use of varieties resistant to pests, the

moderate use of non-toxic, selective pesticides (Integrated Pest Management) or the application of principles of organic farming.

9.4.1 Organic Farming

This defines a certified farming system renouncing to all use of chemically obtained fertilizers and pesticides.

After the recent BSE crisis in Europe the demand for organically produced commodities has increased considerably. Many farmers in Southern Africa do produce organically by tradition or due to lack of funds for expensive artificial farm inputs, but without certification. Organically produced and certified farm products often get a better price than mainstream farm products. Organic farming in Southern Africa is often limited by the scarcity of organic manure and bio-pesticides.

In SADC states certified organic farming is still embryonic. Five states do have programs but implementation is recent and certified production has not started. Another five states produce organically and this produce is certified but the quantities produced are too small for sustainable market development.

9.4.2 Integrated production and pest management (IPM, IPPM)

In this approach, an integral part of modern good agricultural practices (GAP), pesticides are only applied if and when a given pest has reached a level defined as economic threshold or when sufficient natural enemies of the pest have not been detected. Selective pesticides with low toxicity are given preference over highly toxic broad-spectrum active ingredients or high-risk products. The farmer usually saves a considerable amount of money by introducing an IPM/IPPM program into the farming system. However, there is the need to invest a considerable amount of time in pest surveillance and monitoring as a decision-making tool.

All SADC member states are implementing varied integrated pest management programs in collaboration with international organizations. International support in the implementation of IPM programs in SADC has been provided by the Global IPM Facility of FAO, GTZ, IITA, CAB International, Natural Resources Institute (UK), ICIPE, IFAD, and the Dutch Government. IPM implementation has reached a considerable level in six out of eleven member states. The other five states are at various stages of IPM introduction (see Table 8).

9.4.2 Phytosanitary audit systems

During the production cycle it is essential that producers follow good agricultural practices in relation to crop protection against pests. The commodity producing area should be managed in a manner that is commensurate with international standards. Accordingly, a pest management program must be in place and conform to the market requirements. Auditing specialists should be contacted to audit the production area at some stage during the production cycle. In addition external audit specialist should be engaged and should, if required, come from outside the country. Audit reports are helpful in ensuring improvement in the production process. Essentially, the task of the audit is to

evaluate the standards of production of a specific commodity with respect to international trade requirements.

10. RESEARCH AND DEVELOPMENT

Phytosanitary research and development is in general a well-developed area in the majority of the SADC member states. In several SADC states the enforcement of phytosanitary policies is performed by sub-sectors within agricultural research. Research is conducted to not only to obtain research results but also solve acute pest management problems affecting farm production and sanitary protection

10.1 Human resources commensurate with demand of services

In several SADC member countries implementation of plant protection services is left in the hands of personnel not fully qualified for this job:

- Customs inspectors originally hired for other purposes, then trained to perform phytosanitary border control but basic academic qualifications in biology or agronomy are lacking.
- Field extensionists hired to perform the transfer of results produced by research into the farming practice are often hired for their communication skills but have little understanding of scientific research results.

Six out of 11 SADC member states implement a satisfactory system of curricular development for the technical phytosanitary staff. Three member countries, namely Lesotho, Swaziland and Namibia have no plans for curricular development of their technical staff (See Table 9).

10.2 Financial resources

As shown in Table 9 there is a correlation between the resources dedicated to phytosanitary research and the results achieved. In 7 out of 11 SADC member countries the resources applied to this field are limited.

10.3 Infrastructure

General research infrastructure in plant health is directly correlated to the availability of financial resources.

10.4 International support

In the past, the agricultural and phytosanitary research facilities received considerable resources from donor countries. Currently this type of development funding is preferably channeled elsewhere.

Most of the larger countries had projects attached to their agricultural research department, several for the development of IPM in farmer's fields. Some smaller countries received such support, but absorption and transfer capacity for the technologies are limited.

11. MANPOWER DEVELOPMENT AND TRAINING

Manpower development is considered essential for the operation of changes in the performance of phytosanitary services in the SADC region, in the public as well as in the private sector.

11.1 Qualifications required for the services

Nine out of eleven SADC member states have set forth some sort of qualification standards followed when personnel is recruited (see Table 10). The other two states have insufficient standards.

11.2 Manpower development plans

Only six out of eleven SADC member states have satisfactory manpower development plans for the phytosanitary sector. The other five states have partially developed phytosanitary services. Whatsoever manpower plans they may have need to be strengthened.

11.3 Manpower development implementation and international support in this field

Only five of eleven SADC member states implement phytosanitary manpower development with satisfactory results, mostly covering the public sector and reaching more than 50 % of the available staff. Several international cooperation programs of DANIDA, FAO, US-AID (through USDA) and others have been or are currently involved in this field.

12. PUBLIC AWARENESS, INFORMATION FLOWS AND EXCHANGE

Public information systems are of great importance for the implementation of internationally accepted standards, especially for the fields of plant quarantine and pesticide management. Even with limited resources posters and handout information leaflets can be produced, circulated to the public and commented in mass communication programs. The utilization of public communication tools in the transmission of relevant information results in changes in public awareness and has repeatedly helped in drastically reducing the number of transgressions or mistakes in the handling of SPS matters by the private sector.

12.1 Plant Quarantine Posters at public places

Plant quarantine posters should be prepared and put at public places such as entry points, airports, border posts, railway stations, schools colleges and universities. Posters and handout leaflets are still the best tools for alerting travelers and traders about the restrictions imposed upon the trans-border movement of plant material unless import permits and Phytosanitary Certificates have been obtained prior to shipment.

12.2 *Newsletters*

A popular technical newsletter circulated amongst traders or farmers or SPS personnel can be effective in the extension of knowledge about changes in the operation of phytosanitary and plant quarantine systems and about the hazards emanating from the different quarantined and regulated pests.

12.3 *Published pest lists*

SADC member states should compile and publish plant pests including plant quarantine pests. Updated, science based pest lists have been a widely neglected issue in most SADC member states. The preparation of reliable pest lists classified by crops and by their economic importance for the country requires a huge input of highly specialized personnel often not available to individual SADC member states. For this purpose SADC has supported the creation of the technical Plant Protection Sub-commission and of SAFRINET as a means to speed up the exchange of information and to resolve the problem in a regional effort.

12.4 *Electronic pest lists*

Quarantine pest lists should not only be available in hard copy form but can also be prepared as computerized databases for easy and opportune retrieval of information. Electronic databases on pests have the advantage that, besides the currently available information, links to web pages where additional information may be stored or evolving can be presented. Another advantage is that pest diagnostics can be improved through electronic imaging of the causal organism and the specific symptoms to be found on plant material and products. Currently SAFRINET is working on the preparation of this type of information system with the purpose to put it at the service of all the SADC states. Limitations in the availability of information and communication systems at border posts and laboratories would have to be solved so that all SADC member states and the region as a whole can benefit from these important and highly advanced working tools

13 CONCLUSIONS AND RECOMENDATIONS

13.1 *Conclusions*

- 1 Most SADC member states grow a relatively narrow assortment of crops for export. Several of these crops suffer considerable restrictions due to phytosanitary concerns and limitations imposed by the potential importing states. Without reforming the way phytosanitary matters are currently handled in the SADC region, an effective diversification of agricultural export commodities will be difficult.
- 2 In general terms, within SADC, over the past two decades, the plant protection services related to trade have not improved along with economic growth possibilities provided by trade globalization and in several member states they have actually declined due to severe economic constraints. This has affected the phytosanitary control possibilities in the region as a whole. It is of little use if one country carries out an effective system to prevent the introduction of fast disseminating exotic pests, if other SADC member states do not entertain the minimum services required to this avail.
- 3 Several SADC member states, especially those who are small, have a low population density or have been suffering for many years from civil wars or unrest, have not accomplished the setting up of a complete and minimally effective national phytosanitary enforcement and extension system. Particularly the small, landlocked states such as Lesotho, Swaziland and Malawi face difficulties to put in place such a system, because their agricultural production for export would probably not render sufficient income to entertain relatively expensive phytosanitary and plant border control structures. Being landlocked, the main hazard points to be controlled would be the international airports and the postal services. Provided of course that goods in transit to them, originating from outside of SADC are thoroughly controlled at the first point of entry into the region.
- 4 In other member states the farming system is based largely on animal production (Botswana, Namibia) and their population density is low. These two states also are facing difficulties to entertain sufficient plant protection infrastructures and sufficient manpower to carry out all the required phytosanitary and border control tasks.
- 5 If the member states with highly deficient phytosanitary capabilities mentioned above aim to participate in regional efforts to widen their agricultural export possibilities, they would be well advised to contract for infrastructure and personnel services from elsewhere in the region.
- 6 The number of A1 quarantine pests with a limited distribution within SADC, and with expansion potential within SADC is not large. They can be monitored and restrained by inspecting and treating the specific plant products they may be living on. Considerably larger is the number of A2 regulated quarantine pests, with a limited distribution in the SADC states but the ability to disseminate with grains, plant materials and seed. The spread of these pests is prevented by means of seed inspection, treatment and certification programs.
- 7 With the Plant Protection Sub-Committee, SADC has an efficient tool to advance in the gathering of information concerning the national phytosanitary problems and for the production of proposals for regionally harmonized phytosanitary regulations, pest lists,

pesticide registration systems, etc. Unfortunately this extremely useful coordinating body, in economical terms, is not adequately supported.

13.3 Recommendations

- 1 Several SADC member states, to be able to export plant products, would require the services for a sustainable regional Southern African SPS and Food Safety Organization, as otherwise they would not be able to participate in world trade with diversified plant products.
- 2 It is proposed that the SADC Plant Protection Sub-Committee be transformed into a Technical Steering Sub-Committee of such a regional organization as proposed above, which would have to provide funding to the Steering Sub-Committee meetings so as to make it sustainable
- 3 In most SADC member states, for reasons of budgetary constraints, phytosanitary matters are handled as an appendix to agricultural research. The creation of independent phytosanitary services is recommended for those countries financially in a position to afford it. These independent phytosanitary service units should then be placed under the umbrella of a National SPS Authority.
- 4 The regional organization proposed above, by coordinating the proposal of harmonized and generally implemented regional phytosanitary regulations, should also contribute to the availability of transparent, equivalent and sustainable plant protection policies and strategies for all SADC member states. In this context, the development of a regional pesticide registration and management system, the establishment of a regional standard for the handling of GMOs and a SADC-wide external border inspection network working at the same level of excellence in all border inspection posts should be given priority.
- 5 In the future, the SADC Steering Sub-Committee for plant protection matters should also prepare models of national laws on quarantine and phytosanitary measures fully in line with international standards.
- 6 When deciding on phytosanitary inspections of import commodities, preference should be given to pre-shipment inspection in the states of origin. This should be applied to those commodities not traditionally imported into the SADC member states, required for export diversification, and affected by several potential risks. (The Larger Grain Borer is an example of one selected commodity / pest combination whose invasion of a member state in the region can be avoided for a long time by conducting pre-shipment inspections when importing maize from countries in which this pest has been recorded).
- 7 At all international ports and airports with identified high frequency of imports of plant materials; specialized phytosanitary specialists should be stationed to work along with the customs inspectors.

- 8 Border inspection posts with sufficient manpower and infrastructure for SPS inspections should be installed or upgraded at ports, airports, railroad and important road border crossings.
- 9 At international entry points of plant products, the inspection and control system must be extended to the destruction of all catering garbage arriving by ships, airplanes and trains. For this purpose, special incinerators for the environmentally safe destruction of the intercepted plant materials and catering garbage should be placed at strategic larger stations. At smaller stations, safe collection points and transport systems for the material to be incinerated have to be provided for.
- 10 Priority should be given to the identification of pest free areas for those pests severely restricting the export potential. Alternatively, high value export commodities affected by severe pest risks should be irradiated prior to shipment whenever such treatment is acceptable to the importing parties and nations.
10. Regionally equivalent regulations should be prepared for the implementation of phytosanitary inspection upon consignments in transit or imported for re-export.
11. Whenever possible certification and control systems for seed crops and plant nurseries should be regionalized and placed under the same authority or organization responsible for SPS matters.
12. As many SADC member states do not have access to capable phytosanitary diagnostics and analysis laboratories, a network of certified laboratories accessible to all SADC member states should be established.
13. Whenever a SADC member state is not able to provide a reliable phytosanitary certificate, treatment certificates or any other required phytosanitary document, these functions should be taken up by the above-proposed regional organization or, in case of landlocked small states, by the qualified services available at the shortest possible distance from the points of production or export.
14. Given the huge disparities of SADC member states in the capabilities to perform pest risk analysis, a regional task force composed of the required specialists is urgently required. Without such capabilities the weaker economies within SADC will remain marginalized from the mainstream in agricultural trade.
15. Given the permanent threat of the SADC member states to be devastated by migratory pests and given the fact that important breeding grounds of these pests are situated in member states with low density agricultural production, it is essential that these matters are taken up by a regional task force providing a preventive monitoring surveillance and treatment service to the region as a whole.
16. A regional certification unit is required to provide reliable conformity assessment service in phytosanitary matters to the export traders and producers at reasonable costs.

17. There is the basic need within SADC that national phytosanitary authorities concentrate their activities on the integration of all the stakeholders in the production chain of plant export products into a preventive management system organized in such a way, that controls remain necessary but rejections and refusals may be kept at a minimum level.
18. Training in phytosanitary principles and practices is required as a regional long-term service and should be directed to all the stakeholders in phytosanitary issues related to trade.
19. Improvement of communication and information exchange on phytosanitary issues in SADC should be addressed including communication and cooperation between policymakers and technical staff both at national and regional levels.
20. SPS awareness programs for policymakers and other stakeholders should be implemented under the umbrella of a regional organization.
21. An economic assessment of measures both at national and regional and international levels should be conducted on the importance of phytosanitary measures to selected major crops in SADC.
22. Databases on plant quarantine pests and diseases at national and regional levels should be developed for use by inspectors and field officers.
23. Legislation on SPS matters should not be a barrier or hindrance to trade but should aim at facilitating Trade. Where there are disputes, dialogue between the countries involved normally culminates in the attainment of a satisfactory solution. This calls for equivalence and harmonization of phytosanitary procedures and regulations in SADC as the way of removing or limiting barriers to regional and international trade.
24. Food aid should be treated in the framework of SPS procedures and regulations, as otherwise unwanted exotic pests and disease may be introduced in the region.
25. It is recommended that at least those development projects with strong phytosanitary components be coordinated by a regional organization.
26. Amongst the regional phytosanitary matters related to trade, the following weaknesses may be resolved by means of international cooperation projects:
 - Harmonization of phytosanitary and pesticide management procedures and regulations
 - Deepening in the participation in standards setting and management in relation to IPPC, pesticides, prior informed consent procedures, persistent organic pollutants, etc
 - Regional Pest Management Program for the Larger Grain Borer

- Establishment of an Information Centre for Migratory Pests
- Development of an IPPM project for regional implementation
- Review of all plant protection Units in SADC by focal points
- Integration of SAFRINET into a regional SPS organization
- Certification and trade of seed and planting materials

Appendix 1: ABBREVIATIONS

BioNET or

BioNET International: International Biosystematics network based in the United Kingdom

BIP:	Sanitary Border Inspection Post or Point. And office and laboratory facility for the phytosanitary, veterinary and food safety inspection of goods to be imported into a country or region
CAB:	Commonwealth Agricultural Bureau based in the UK and attending UK related commonwealth agricultural matters, including documentations and distribution maps on pests and diseases, transfer of Phytosanitary technology, etc.
CABI:	Commonwealth Agricultural Bureau International. The international wing of CAB, with a regional office in Nairobi, Kenya. Six SADC member states are also members of CABI and carry out joint R&D programs on phytosanitary matters with CABI
CODEX:	The Codex Alimentarius Commission of FAO and WHO setting up food safety standards
DANIDA:	Danish Agency for International development. DANIDA is active in phytosanitary matters in several SADC member states
EU:	European Union.
FAO:	The Food and Agriculture Organization of the United Nations
GAP:	Good Agricultural Practice. A series of measures to improve safety, security and productivity in the Farming System
GM:	Genetically Modified. Artificial modifications of the genome of a living organism or virus using techniques of molecular biology
GMO's:	Genetically Modified Organisms. The use of GMO's in agricultural production and for phytosanitary purposes is still restricted in several important trading partners within SADC and abroad, especially the EU.
GTZ:	German Agency for Technical Cooperation. The major German consulting corporation for international development based near Frankfurt and with two recent activities in the SADC region.
IAPC:	Inter - African Phytosanitary Council of the OAU (Organization of African Unity) based in Cameroon.

ICIPE:	The International Institute of Insect Physiology and Ecology, a member of the CGIAR group of International Agricultural Research Institutes, with head office in Nairobi, Kenya and joint cooperation programs on phytosanitary R&D in several SADC member states
IFAD:	International Fund for Agricultural Development, based in Sweden and part of the United Nations Development Group under the leadership of UNDP.
IITA:	The International Institute on Tropical Agronomy, a member of the CGIAR group of International Agricultural Research Institutes, with head office in Ibadan, Nigeria and joint cooperation programs on phytosanitary R&D in several SADC member states
IPM:	Integrated Pest Management, a cornerstone of phytosanitary GAPs aiming at the use of selective pesticides with low toxicity, low environmental impact and applied according to economic threshold parameters
IPPM:	Integrated production and pest management, integrating IPM into the rest of the farming system
IPPC:	International Plant Protection Commission, A permanent commission of the FAO for the setting of international phytosanitary standards.
NPPUs:	National Plant Protection Units
NRI:	National Research Institute, based in the United Kingdom and with phytosanitary cooperation activities in some SADC member states
PIC or Prior Informed Consent:	Referring to the International Convention on Prior Informed Consent directing a member country to seek prior consent before highly toxic and severely restricted chemicals are shipped into another country
POPs:	Persistent Organic Pollutants, controlled by international convention
SADC:	Southern African Development Community, encompassing 14 African States with headquarters in Gaborone, Botswana
SABONET:	Southern African Botanical Network working at the level of SADC
SAFRINET:	Southern African Network of Biosystematics working at the level of SADC and based in Pretoria.
SARCUSS:	Southern African Centre for Conservation and Utilization of Soils
SEARCH:	Southern and East African Research for Chemical Harmonization

SPS:	Sanitary and Phytosanitary ands Food Safety Measures as defined by the WTO-SPS agreement.
UNEP:	United Nations Environmental Program
US-AID:	United States Agency for International Development
WTO:	World Trade Organization of the United Nations

APPENDIX 2: CONSULTED PUBLICATIONS AND DOCUMENTS

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Table 1
Plant Protection Policies And Legislation

	<i>Botswana</i>	<i>Lesotho</i>	<i>Malawi</i>	<i>Mauritius</i>	<i>Mozambique</i>	<i>Namibia</i>	<i>South Africa</i>	<i>Swaziland</i>	<i>Tanzania</i>	<i>Zambia</i>	<i>Zimbabwe</i>	<i>Regional Average</i>
Policies												
Plant protection strategies	3	2	4	3	3	2	4	2	4	4	4	3
Transparency implementation	2	1	3	2	3	2	4	1	3	3	4	3
Pesticide management	3	2	3	?	2	1	3	2	3	3	3	
Residue management	1	1	2	2	1	1	3	1	2	2	2	2
GMO development and introduction	1	0	1	?	1	1	3	1	1	2	3	1
Biocontrol agents	1	1	2	2	1	1	4	1	3	3	3	2
Country average	2	1	3	?	2	1	4	1	3	3	3	2
Legislation												
Plant health laws	2	0	3	3	3	2	4	0	4	4	4	3
Plant health regulations	1	1	3	2	3	2	4	0	4	4	4	3
Plant health manuals and operation	2	1	3	2	1	1	4	1	4	4	4	2
Implementation according to standards	2	1	3	3	3	2	4	1	4	4	4	3
Country average	2	1	3	3	3	2	4	1	4	4	4	3

Scale

0 - 5, where

0 = not implemented

5 = implemented up to international standards

Table 4
Plant Protection Assessment:
Phytosanitary Inspections

	Botswana	Lesotho	Malawi	Mauritius	Mozambique	Namibia	South Africa	Swaziland	Tanzania	Zambia	Zimbabwe	Regional Average
Pre Entry												
Pre-shipment seed	0	0	0	1	1	0	2	0	2	3	3	1
Seed crop during growth	1	0	0	2	1	0	3	0	3	3	4	2
Produce and products	0	0	0	1	1	0	4	0	2	3	4	1
Pest free areas	0	0	1	3	2	0	4	0	2	3	4	2
Incinerator	0	0	0	1	0	0	3	0	2	2	2	1
Transit consignments	0	0	0	0	3	0	3	0	2	1	3	1
Top up consignments	0	0	0	0	0	0	0	0	0	0	2	0
Country average	0	0	0	1	1	0	3	0	2	2	3	1
Post Entry												
Nurseries	1	0	3	2	2	1	4	1	3	3	4	2
Seed crop during growth	1	1	3	3	2	1	4	1	3	2	3	2
Greenhouse	1	0	4	4	2	2	4	1	3	2	3	2
Packhouses and coldstores	0	0	4	4	3	0	4	1	2	2	3	2
Labs	1	1	3	3	3	2	4	2	3	2	3	2
Transit	1	0	2	0	3	0	4	0	2	1	3	1
Top up consignments	0	0	0	0	0	0	0	0	0	0	2	0
Country average	1	0	3	2	2	1	3	1	2	2	3	2

Scale

0 - 5, where

0 = not implemented

5 = implemented up to international standards

Table 5
Phytosanitary Documentation

	<i>Botswana</i>	<i>Lesotho</i>	<i>Malawi</i>	<i>Mauritius</i>	<i>Mozambique</i>	<i>Namibia</i>	<i>South Africa</i>	<i>Swaziland</i>	<i>Tanzania</i>	<i>Zambia</i>	<i>Zimbabwe</i>	<i>Regional Average</i>
Phytosanitary certificate	0	1	2	3	2	1	3	1	3	3	3	2
Import permit	1	1	3	3	3	2	3	2	3	3	3	2
Noncompliance notification	0	0	1	2	2	1	3	1	2	2	2	1
Commodity treatment certificate	2	2	2	3	3	2	3	2	3	3	3	3
Carrier treatment certificate	1	0	2	3	3	2	3	1	3	3	3	2
Country average	1	1	2	3	3	2	3	1	3	3	3	2

Key

0 = not used

1 = Available on request

2 = Implemented

3 = Implemented and supported by results

Table 6
Pest Risk Analysis

	Botswana	Lesotho	Malawi	Mauritius	Mozambique	Namibia	South Africa	Swaziland	Tanzania	Zambia	Zimbabwe	Regional Average
Hazard identification	1	1	2	3	1	1	4	1	3	3	3	2
Risk assessment	2	2	2	3	2	2	4	2	3	3	3	3
Risk management	3	2	3	3	3	2	4	2	3	3	3	3
Risk communication	2	1	3	2	2	1	3	1	2	3	3	2
Country average	2	2	3	3	2	2	4	2	3	3	3	2

Scale

0 - 5, where

0 = not implemented

5 = implemented up to international standards

Table 7
Rapid Alert System

	<i>Botswana</i>	<i>Lesotho</i>	<i>Malawi</i>	<i>Mauritius</i>	<i>Mozambique</i>	<i>Namibia</i>	<i>South Africa</i>	<i>Swaziland</i>	<i>Tanzania</i>	<i>Zambia</i>	<i>Zimbabwe</i>	<i>Regional Average</i>
Pest surveillance	1	1	2	3	3	1	4	1	3	3	3	2
Field inspection	1	1	3	3	2	1	4	1	4	4	4	3
Warehouses and packing plants	1	1	2	3	3	2	4	2	4	4	4	3
Emergency actions	2	1	3	3	3	2	4	2	4	4	4	3
Migratory pests	2	1	3	3	4	2	4	3	4	4	4	3
Country average	1	1	3	3	3	2	4	2	4	4	4	3

Scale

0 - 5, where

0 = not implemented

5 = implemented up to international standards

Table 8
Safety Assurance

	Botswana	Lesotho	Malawi	Mauritius	Mozambique	Namibia	South Africa	Swaziland	Tanzania	Zambia	Zimbabwe	Regional Average
Noncompliance, transparency, and conformity assessment	2	1	4	4	3	2	4	3	4	4	4	3
Pest management programmes (farmer fields)	3	2	4	4	3	2	3	2	4	4	4	3
Pest risk management programmes	2	1	3	3	3	2	4	2	3	3	3	3
Organic farming good agricultural practices (OF GAP)	1	1	2	2	1	1	3	1	2	2	2	2
Integrated pest management good agricultural practices (IPM GAP)	2	1	3	3	2	2	3	2	3	3	4	3
Phytosanitary audit systems	0	0	3	2	2	1	4	1	3	3	3	2
Country average	2	1	3	3	2	2	4	2	3	3	3	3

Scale

0 - 5, where

0 = not implemented

5 = implemented up to international standards

Table 9
Research and Development

	Botswana	Lesotho	Malawi	Mauritius	Mozambique	Namibia	South Africa	Swaziland	Tanzania	Zambia	Zimbabwe	Regional Average
Human resources as required by services	2	1	4	4	2	1	4	1	4	3	3	3
Financial resources	3	2	3	3	2	2	4	2	3	3	3	3
Infrastructure	2	2	3	3	2	2	4	2	3	3	3	3
International support	3	2	3	2	3	2	3	2	3	3	4	3
Country average	3	2	3	3	2	2	4	2	3	3	3	3

Scale

0 - 5, where

0 = not implemented

5 = implemented up to international standards

Table 10
Manpower Development and Training

	Botswana	Lesotho	Malawi	Mauritius	Mozambique	Namibia	South Africa	Swaziland	Tanzania	Zambia	Zimbabwe	Regional Average
Qualification requirements of services	4	3	4	3	2	2	4	3	4	4	4	3
Manpower development plans	2	1	3	3	2	2	4	2	4	4	4	3
Manpower development implementation	2	1	3	2	2	2	3	2	3	3	3	2
International support	3	2	3	3	2	2	3	2	3	3	3	3
Country average	3	2	3	3	2	2	4	2	4	4	4	3

Scale

0 - 5, where

0 = not implemented

5 = implemented up to international standards